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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to communication equipment, such as a portable telephone and a personal handy phone machine (PHS:Personal Handy Phone System). Especially this invention relates to the display system and approach of communication equipment which make a text legible and also make an input easy.

[0002]

[Description of the Prior Art] It is general that data communication prospers, and a personal computer and other information terminals are used for a portable telephone etc. in recent years, connecting with it. Communication equipment, such as a portable telephone, moves against it, while a miniaturization and lightweight-ization progress, and big screen-ization of a liquid crystal display is progressing.

[0003] The device which equipped fundamentally communication equipment, such as a portable telephone whose message function is a subject, with functions, such as an electronic mail and an on-line service, is commercialized, and big screen-ization of a liquid crystal display is desired further. Drawing 13 is the perspective view of the conventional fold-up mold portable telephone, and drawing 14 is the perspective view of the conventional rod type portable telephone. In addition, it explains by giving the same sign and a number to the same component through a complete diagram.

[0004] The liquid crystal display section 2 is built in each of the body 1 of communication equipment like the fold-up mold portable telephone shown in drawing 13, and the rod type portable telephone shown in drawing 14, and it is united with the body 1. As mentioned above, it stopped [ a message function is a subject, and small and lightweight-izing are important in respect of salability from portability, and / in respect of user-friendliness ] breadth by the body 1 of communication equipment, and is longwise.

[0005]

[The technical problem which invention makes solution \*\*\*\*\*] However, if big screen-ization of the liquid crystal display section 2 of the above-mentioned communication equipment is attained, even if made for a long time in a lengthwise direction, it is difficult [ it ] for a longitudinal direction to make it broad. For this reason, when the liquid crystal display section 2 is longwise, there are few total characters on screen of a horizontal party, and it is hard to read a text, and the problem that an input is not easy, either arises.

[0006] Although the text with much amount of information also has the approach of changing only the display direction to demand of wanting to widen the liquid crystal display section 2 and to see it in order to solve this problem, when inputting, the display of an input carbon button is hard to see, and another problem that operability is bad arises. Therefore, this invention aims at offering the display system and approach of communication equipment also with an input a text is readable and easy a text in view of the above-mentioned trouble.

[0007]

[Means for Solving the Problem] In the display system of communication equipment

which has the longwise liquid crystal display section in order that this invention may solve said trouble Since longwise, as a unit of said communication equipment, said liquid crystal display section oblong Or this display unit section that makes it rotate conversely, The display system of the communication equipment characterized by having this display change-over section that switches the display of said liquid crystal display section conversely is offered oblong, since longwise with rotation of said display unit section.

[0008] With this means, since the direction of a liquid crystal display also made the liquid crystal display section long to a lengthwise direction changed pivotable, it is possible for it to be oblong and to see a text with many alphabetic characters, it becomes easy to read a text, and functionality improves similarly in the case of an input. Preferably, further, a rotation lock device is established and, as for said rotation lock device, a lock setup of rotation of said display unit section and a lock reset are performed.

[0009] Since said display unit section was made pivotable, this means enables it to forbid free rotation of said display unit section. A manual operation button is prepared in the body part of the communication equipment which appears after rotating oblong preferably, since said display unit section is longwise.

[0010] With this means, since a new manual operation button can be prepared, operability improves further. Preferably, said communication equipment is a fold-up mold portable telephone. Furthermore, said communication equipment is a rod type portable telephone preferably. To the portable telephone of various molds, it is oblong, and a text is seen or this means enables it to input.

[0011] Since said display unit is longwise, it makes this reverse rotate said liquid crystal display section oblong with a demand signal preferably. With this means, since it rotates oblong with a demand signal since the display unit is automatically longwise, it switches oblong since the display of the liquid crystal display section is also automatically longwise, and it returns automatically after termination of a demand, operability improves further.

[0012] Furthermore, this invention offers the method of presentation of this process rotated conversely and the communication equipment characterized by having this display change-over section that switches the display of said liquid crystal display section conversely oblong with rotation of said liquid crystal display section 2 since longwise oblong, since longwise [ as a unit of said communication equipment / in said liquid crystal display section ] in the method of presentation of the communication equipment which has the longwise liquid crystal display section.

[0013] With this means, like the above-mentioned invention, since the direction of a liquid crystal display also made the liquid crystal display section long to a lengthwise direction changed pivotable, it is possible for it to be oblong and to see a text with many alphabetic characters, it becomes easy to read a text, and functionality improves similarly in the case of an input.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing. Drawing 1 is the perspective view of the display system of the communication equipment about the fold-up mold portable telephone concerning this invention. As shown in this Fig., the display unit section 3 was formed in the body 1 of a fold-up mold portable telephone, and it is the unit of a body 1, and the display unit section 3 dissociated with the body 1, and is combined with pivotable

structure.

[0015] The liquid crystal display section 2 of a long big screen is formed in a lengthwise direction, and the liquid crystal display section 2 is electrically connected with a body 1 at the display unit section 3. In the liquid crystal display section 2, a busy condition is usually shown and there is usually the condition of talking over the telephone as a telephone and of generally using it at the time of the date time stamp, dial actuation, and a functional setup in a busy condition.

[0016] Drawing 2 is drawing showing the condition of having rotated the display unit section 3 of drawing 1. As shown in this Fig., the display unit section 3 rotates 90 degrees, and since oblong, it rotates the liquid crystal display section 2 which rotated oblong and rotated since it was longwise in the liquid crystal display section 2 so that it may return longwise. the revolving shaft of the display unit section 3 -- the display unit section 3 -- it is mostly located in the center. Furthermore, the rotation lock device 5 fixed by rotation of 90 one directions is formed in the display unit section 3.

[0017] Drawing 3 is drawing explaining rotation of the revolving shaft of the display unit section 3. As shown in this Fig. (a), the revolving shaft 6 of the display unit section 3 is formed in a cylinder, and the business trip section 7 is formed in the perimeter. Switch 3A for section rotation detection is prepared in the business trip section 7, and switch 3A for rotation detection penetrates the business trip section 7.

[0018] As shown in this Fig. (b), the rotation hole 8 is established in the body 1 of a fold-up mold portable telephone, and the rotation hole 8 is formed in the path which can hold the revolving shaft 6 of the display unit 3, and has the tooth space 10 which the business trip section 7 of the display unit section 3 rotates 90 degrees. In addition, Walls 8A and 8B are formed in the both sides of a tooth space 10. As shown in this Fig. (c), the revolving shaft 6 of the display unit section 3 is held in the rotation hole 8 of a body 1, and the business trip section 7 of a revolving shaft 6 performs 90 rotations from a longwise location to an oblong location.

[0019] Drawing 4 is drawing showing switch 3A for rotation detection of drawing 3. As shown in this Fig., terminals 11, 12, and 13 are formed in the interior of the business trip section 7 which switch 3A for rotation detection penetrates, and supply voltage Vcc and -Vcc are connected to terminals 11 and 13. A terminal 12 is connected to GND (touch-down) through resistance 14. Corresponding to the height location of switch 3A for rotation detection, Projections 9A and 9B are formed in Walls 8A and 8B.

[0020] Projections 9A and 9B push switch 3A for rotation detection with rotation of the revolving shaft of the display unit section 3. As shown in this Fig. (a), it is pushed on projection 9 of wall 8A A, switch 3A for rotation detection is connected to terminals 11 and 12, and the electrical potential difference of switch 3A for rotation detection serves as Vcc. As shown in this Fig. (b), it is pushed on projection 9 of wall 8B B, and switch 3A for rotation detection is connected to terminals 12 and 13, and it is the electrical potential difference of switch 3A for rotation detection. - It is set to Vcc.

[0021] Thus, it becomes possible by detecting the positive/negative of the electrical potential difference of switch 3A for rotation detection to detect whether the display unit section 3 rotated 90 degrees in the longwise location or the oblong location direction.

Drawing 5 is drawing which explains the rotation lock of the display unit section 3 to a body 1. As shown in this Fig., rotation lock section 5A is prepared in the rotation lock device 5, and are a thin rod, and it locks or the Toride part which performs lock discharge

is bendable, and rotation lock section 5A is bent during a lock, and is embedded in the crevice of the front face of the display unit section 3.

[0022] Hole 5B for longwise and hole 5C for oblong are prepared in a body 1, and each hole is formed in a path in which the rod of rotation lock section 5A is inserted. It is decided that it will be a location suitable for being fixed longwise [ hole 5B for longwise and the location of hole 5C for oblong / the display unit section 3 ] and oblong (lock). On the upper case of drawing 5 (a), the display unit section 3 is fixed to a longwise location, by interruption of drawing 5 (a), immobilization of the longwise location of the display unit 3 tends to be canceled, and the case where immobilization of the longwise location of the display unit section 3 is canceled, and it is shown in the lower berth of drawing 5 (a).

[0023] On the upper case of drawing 5 (b), the display unit section 3 is fixed to an oblong location, by interruption of drawing 5 (b), immobilization of the oblong location of the display unit 3 tends to be canceled, and the case where immobilization of the oblong location of the display unit section 3 is canceled, and it is shown in the lower berth of drawing 5 (b). Thus, since the display unit section 3 was made pivotable, it becomes possible to forbid free rotation of the display unit section 3 according to the rotation lock device 5.

[0024] Drawing 6 is a block diagram explaining the connection relation of drawing 1 and the display unit section 3 of drawing 2 , and the liquid crystal display section 2. As shown in this Fig., switch 3A for rotation detection is prepared in the display unit section 3, and switch 3A for rotation detection detects 90-degree rotation of the display unit section 3, and this inverse rotation.

[0025] Display change-over section 2A is prepared in the liquid crystal display section 2, and display change-over section 2A switches the longwise display of the liquid crystal display section 2 to an oblong display. Display change-over section 2A of the liquid crystal display section 2 is connected to switch 3 for rotation detection A of the display unit section 3, and switch 3A for rotation detection will output a detecting signal to display change-over section 2A, if 90-degree rotation of the display unit section 3 is detected, or if rotation is detected these 90 reverse degrees.

[0026] If the above-mentioned detecting signal is inputted, display change-over section 2A rotates the display of the liquid crystal display section 2 90 degrees, and since oblong, it will switch it to a longwise display oblong, since longwise. In addition, a hand of cut may be a clockwise rotation or a counterclockwise rotation. Drawing 7 is a flow chart explaining the example of display change-over section 2A in drawing 1 of operation.

[0027] As shown in this Fig., in step S1, it is judged by display change-over section 2A whether the liquid crystal display section 2 is displayed longwise. In decision of a longwise display, in step S2, it waits for a rotation detecting signal to input 90 degrees from switch 3 for rotation detection A. In step S3, when a rotation detecting signal inputs 90 degrees, since longwise, by display change-over section 2A, the display of the liquid crystal display section 2 is switched oblong.

[0028] In decision of a horizontal display, in step S4, it waits for a rotation detecting signal to input 90 degrees from switch 3 for rotation detection A at step S1. In step S5, when a rotation detecting signal inputs 90 degrees, since oblong, by display change-over section 2A, the display of the liquid crystal display section 2 is switched longwise. Thus, while rotating the long liquid crystal display section 3 to a lengthwise direction, it

becomes possible to rotate the direction of a liquid crystal display to compensate for rotation of the liquid crystal display section 3.

[0029] Next, as shown in drawing 6 , mechanical-component 3B is prepared in the display unit section 3, and rotation mechanical-component 3B will rotate the revolving shaft of mechanical-component 3B by a motor etc., if the selection demand of an electronic mail, an on-line service, etc. and a terminate signal are inputted. Moreover, mechanical-component 3B performs lock setup of the rotation lock device 5, and discharge by a solenoid etc.

[0030] Drawing 8 is a flow chart explaining another example of the liquid crystal display section 2 of operation. As shown in this Fig., in step S11, it waits for selection demand signals, such as an electronic mail and an on-line service, to input by rotation drive 3B. In step S12, when demand signals, such as electronic mail processing, input, mechanical-component 3B cancels the lock of the rotation lock device 5.

[0031] In step S13, the display unit section 3 is rotated by mechanical-component 3B. In step S14, it waits for a rotation detecting signal to input 90 degrees from switch 3 for rotation detection A. In step S15, when a rotation detecting signal inputs 90 degrees, the lock of the rotation lock device 5 is set up by mechanical-component 3B.

[0032] In step S16, by display change-over section 2A, since oblong, the display of the liquid crystal display section 2 is switched longwise. It waits for termination of electronic mail processing etc. in step S17. In step S18, when electronic mail processing etc. is completed, mechanical-component 3B cancels the lock of the rotation lock device 5.

[0033] In step S19, the display unit 3 is rotated by mechanical-component 3B, and it returns to the original location. In step S20, it waits for a rotation detecting signal to input 90 degrees from switch 3 for rotation detection A. In step S21, when a rotation detecting signal inputs 90 degrees, the lock of the rotation lock device 5 is set up by mechanical-component 3B.

[0034] In step S22, by display change-over section 2A, since oblong, the display of the liquid crystal display section 2 is switched longwise. Thus, by the selection demand of an electronic mail etc., since the display unit section 3 is rotated automatically, improvement in the change operability of a display of the liquid crystal display section 2 is attained.

[0035] Drawing 9 is the perspective view of the display system of the communication equipment about the rod type portable telephone concerning this invention, and drawing 10 is drawing showing the condition of having rotated the display unit section 3 of drawing 9 . As shown in drawing 9 and drawing 10 , the display unit 3 of a rod type portable telephone and the liquid crystal display section 2 also have the same configuration as drawing 1 , the display unit 3 of the fold-up mold portable telephone shown in drawing 2 , and the liquid crystal display section 2, an operation, and actuation.

[0036] Drawing 11 is the perspective view of the modification of drawing 2 , and drawing 12 is the perspective view of the modification of drawing 10 . In the state of rotation of drawing 11 , the folding mold of drawing 12 , and the display unit 3 of a rod type portable telephone, two or more manual operation buttons 4 are formed in the part of the body 1 which appears in that case. By giving a new function to the added manual operation button 4, it becomes possible to aim at improvement in operability.

[0037]

[Effect of the Invention] Since the direction of a liquid crystal display also made the liquid crystal display section long to a lengthwise direction changed pivotable according

to this invention as explained above, it is possible for it to be oblong and to see a text with many alphabetic characters, it becomes easy to read a text, and functionality improves similarly in the case of an input.

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## CLAIMS

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[Claim(s)]

[Claim 1] The display system of the communication equipment characterized by having this display change-over section that switches the display of said liquid crystal display section conversely oblong since longwise with rotation of this display unit section that makes it rotate conversely, and said display unit section in the display system of communication equipment which has the longwise liquid crystal display section oblong as a unit of said communication equipment since longwise in said liquid crystal display section.

[Claim 2] Furthermore, it is the display system of communication equipment according to claim 1 characterized by said rotation lock device performing a lock setup of rotation of said display unit section, and a lock reset by establishing a rotation lock device.

[Claim 3] The display system of communication equipment according to claim 1 characterized by preparing a manual operation button in the body part of the communication equipment which appears after rotating oblong, since said display unit section is longwise.

[Claim 4] The display system of communication equipment according to claim 1 which said communication equipment folds up and is characterized by being a mold portable telephone.

[Claim 5] The display system of communication equipment according to claim 1 characterized by said communication equipment being a rod type portable telephone.

[Claim 6] Said display unit is a display system of communication equipment according to claim 1 characterized by this thing [ making it rotate conversely ] oblong since longwise in said liquid crystal display section with a demand signal.

[Claim 7] The method of presentation of the communication equipment characterized by having this display change-over section that switches the display of said liquid crystal display section conversely oblong since longwise with this process rotated conversely and rotation of said liquid crystal display section 2 oblong since longwise [ as a unit of said communication equipment / in said liquid crystal display section ] in the method of presentation of the communication equipment which has the longwise liquid crystal display section.

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